Changes on weed flora from 1976 and thirty years later in Spanish winter cereals

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In this work we compare the weed flora recorded in 1976 with that in 2005-07 in winter cereal fields in the province of Zaragoza. In 2005-07 we used a very similar methodology to that used in 1976, based on surveying the fields in a zig-zag by three persons until not founding new species and assessing the abundance of species with a visual scale. It is concluded that grass species have increased, especially *Lolium rigidum* Gaudin and *Avena* spp. The average number of species found in each field has decreased from 9.5 ± 2.3 in 1976 to 3.4 ± 2.3 in 2005-07. In 1976, 22 species were found in more than 30% of the fields studied, in 2005-07 only 4 species were counted. Species that have declined more drastically are *Daucus carota* L., *Scandix pecten-veneris* L., *Veronica agrestis* L., *Papaver hybridum* L., *Roemeria hybrida* (L.) DC. and *Hypecoum procumbens* L.. However, we have found 23 species, which were not recorded in 1976, including: *Chondrilla juncea* L., *Phragmites australis* (Cav.) Trin., *Sorghum halepense* (L.) Pers., *Xanthium strumarium* L., *Kochia scoparia* (L.) Schrader, *Hordeum murinum* L.. Some are linked to minimum tillage, others are tolerant to glyphosate pre-sowing treatments (*Equisetum arvense* L., *Malva sylvestris* L.) and others may have advanced their emergence due to global warming.